



# Renown

## Operating Guide

**WARNING:**  
TO PREVENT ELECTRICAL SHOCK OR FIRE  
HAZARD, DO NOT EXPOSE THIS APPLIANCE  
TO RAIN OR MOISTURE.

### GENERAL DESCRIPTION

Through our Research & Development programs, we have recently made tremendous strides in solid-state design. Peavey's new Renown™ embodies totally new innovations, as well as the experience gained over the past fifteen years. Music has seen amps go from small single units to large stacks and now back to smaller amps again. Many musicians today are desperately seeking a **good** small amp. The new Peavey Renown™ is quite a departure from previous solid-state amps and represents what we feel is a dramatic increase in performance over units previously available. This versatile new amplifier features totally new circuitry throughout. Careful attention has been paid to even the most subtle factors influencing tonal texture, overload dynamics, sustaining characteristics and interaction of the preamp, power amp stage/loudspeaker combination. The thousands of hours we have spent giving this attention to the many and various ingredients and "seemingly insignificant" details makes the difference between a superlative and exceptional amplifier and one that is merely good.

The Renown™ incorporates the features needed to reproduce the complex tonalities and dynamics necessary for today's guitarists. Our intensive Research and Development program has recently yielded several significant and, we feel, pivotal breakthroughs in amplification of the electric guitar. For many years, both guitarists and instrument amp manufacturers have diligently sought to reproduce the warm, "saturating" characteristic of vacuum tubes with solid-state equipment. Our innovative new Renown™ features a new effect that we call "SATURATION™," which produces the kind of gain compression/expansion that has previously been obtainable only with a select few extremely high gain, relatively powerful tube-type amps. In the past, many companies have attempted to reproduce the much sought after characteristics of vacuum tubes by using field effect transistors, MOS FETS, interstage transformers, series gain stages, etc. The results were usually **loud** but **did not** accomplish the goal. We feel our new SATURATION™ circuit gives the necessary dynamic characteristics, harmonic texture, and compression/expansion so eagerly sought after by contemporary musicians.

To complement the sophisticated circuitry of this dual channel amplifier, we have included the latest generation of tonal networks in each channel. The lead channel contains a three-band passive network and an active presence control. The unique presence control is located at the proper point in the circuitry to allow incremental control over the extreme highs...even when playing in the distortion mode. The normal channel utilizes active type high and low equalization and our unique Paramid™ control for the vital midrange frequencies. Our Paramid™ circuit enables true boost or cut capability in the midrange, as well as enabling shifting the center frequency over an extremely wide range.

The combination of input dynamics, Saturation™ effect, and extremely effective equalization circuitry enables the Renown™ to quite literally simulate almost any guitar sound available from any amp, old or new. Each channel also features its own pre and post gain controls in conjunction with our unique Automix™ switching circuitry.

In addition to the above, a full range reverb has been included utilizing a current source drive circuit for optimized damping and maximum performance from the reverb delay line. The Renown's™ rugged power amplifier is capable of delivering more than 160W RMS and all of its operating parameters, circuitry and components have been carefully matched and designed in conjunction with its internal 12" SCORPION™ speakers. We have utilized the **total system** approach for precisely matching and balancing each component even down to the internal tooling for the loudspeaker cone itself in order to achieve the **exact** and vital interplay so **necessary** in achieving the level of performance produced by this unit. The ruggedly constructed ¾" cabinet is covered with a tough 34 oz. vinyl which has proven to be unmatched for roadability and durability.

### FRONT PANEL

#### INPUTS (A) (B)

The new Renown™ has been provided with two input jacks, each having different sensitivities and a unique arrangement allowing the gain of **both** jacks to be **equalized** when instruments are plugged into **both** jacks. The high gain jack (A) is the input normally used and has considerably more sensitivity and input impedance than the low gain jack (B). This low gain jack has been included to allow extension of the input dynamic range. If the output signal from your instrument is prematurely overloading (distorting) the high gain input, then the low gain input (-6 dB) should be used.

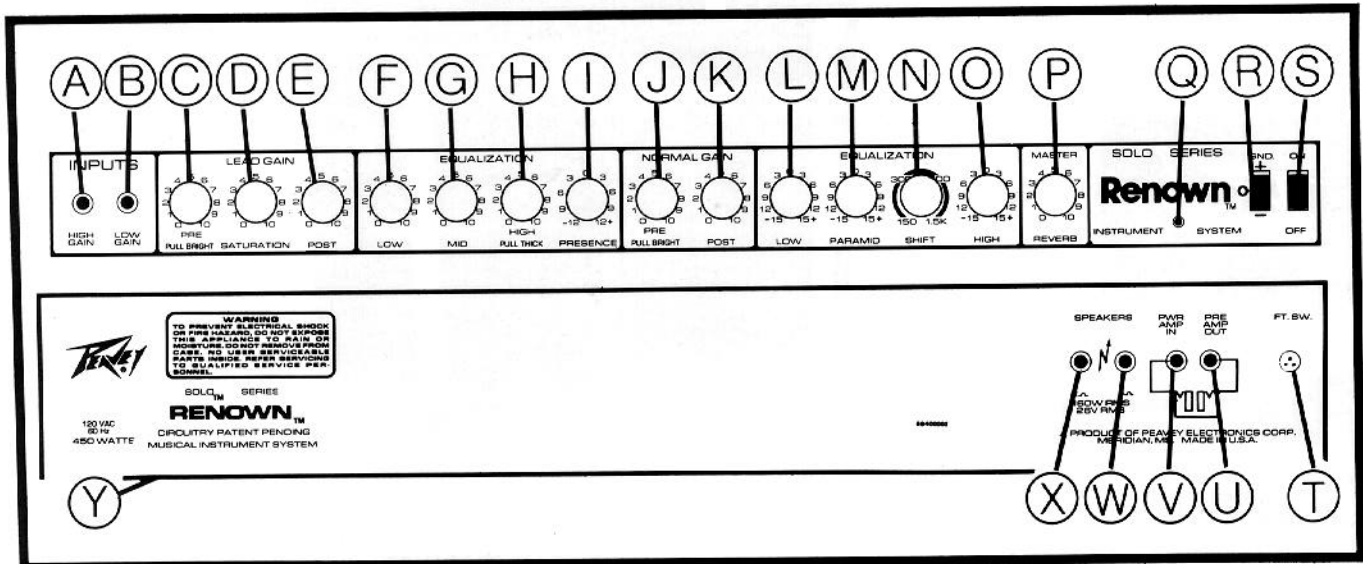
### LEAD CHANNEL

#### GAIN BLOCK™

The lead channel of the Renown™ has been designed utilizing our new "GAIN BLOCK™" signal processing front end. The provision of three interacting controls allows total control of the amp's gain structure (dynamics), harmonic content, overload texture, and output level. Each of the three control functions must be understood, and adequate experimentation time must be spent in order to fully utilize the potential of this unique and innovative new amp.

#### PRE GAIN/PULL BRIGHT CONTROL (C)

Our lead channel pre gain control is similar to a conventional volume control in that it is the **first level setting device** in the system. Our input preamp circuitry utilizes variable negative feedback with the pre gain control as part of the active circuit. Utilization of this type circuitry enables an optimum combination of input dynamic range, input impedance, and low noise operation for any particular gain setting. Operation should present no problem since its action is conventional even though the associated circuitry is quite different from older, totally passive circuits. Please be aware that this control exhibits the professional logarithmic (audio) taper having approximately one-fourth of the gain achieved at the 12:00 o'clock position with the balance being obtained as the control is rotated clockwise. Many manufacturers utilize "linear" action controls that concentrate almost all of the gain in the first one-third of the control rotation. While this "linear operation" is "initially impressive," it should be noted that having **all** the gain "up front" in the **first one-third turn** is **misleading** and significantly reduces the amount of control latitude available.



The pre gain control features an integral pull switch giving a boost to the high frequencies of approximately 8 dB. This pull switch enables significant "brilliance" to be added when desired. Experience has proven that added brilliance tends to detract somewhat from the smooth overload characteristics when playing in the distortion mode.

#### "SATURATION"™ CONTROL (D)

The SATURATION™ control is the element for setting the operating point for our new and unique "SATURATION"™ circuitry." Because the guitar amp is a very vital part of the sound of the electric guitar, we have devoted many years toward achieving the proper "sound" and gain/overload dynamics sought by guitarists. Until now, amps utilizing vacuum tubes (valves) have been considered by many players to be superior to most solid-state units. Today, Peavey is the only **major** manufacturer of **both** tube type **and** solid-state amps, giving us a unique opportunity to study and analyze the various characteristics of each type.

Our extensive research revealed that tubes have the unique ability to "gain compress" at high levels producing a pleasing and "harmonically rich" smooth overload capability. Once having identified the various characteristics of tube amps, we set out to develop solid-state circuitry that would match the dynamics and harmonic textures of tube type equipment.

Our "SATURATION"™ effect closely duplicates the gain/compression effect of vacuum tubes. The total tube sound is a result of the "interplay" between the voltage application (preamp) and the power amp/speaker interface. The "SATURATION"™ circuit operates in the preamp circuitry and exhibits successively more gain/compression effect as the control is rotated clockwise. It should be noted that the SATURATION™ effect must be balanced with proper settings of all three controls in the GAIN BLOCK™ for maximum effect. The pre gain must be set high enough for adequate drive voltage to the SATURATION™ circuit, while the SATURATION™ control should be varied to achieve the desired sustain/overload characteristics. The post gain (master volume) sets the sensitivity of the power amp and must be used in conjunction with the above controls for proper results.

It should be remembered that the SATURATION™ effect takes place in the **preamp** and that when the pre and post gain controls are set to drive the power amp to maximum output, the SATURATION™ circuit will have correspondingly little effect on the total sound of the unit as the normal overload characteristics of the **power amp** come into effect.

#### NOTE

**TO ACHIEVE PROPER SATURATION™ CHARACTERISTICS FROM YOUR AMPLIFIER, YOU MUST UNDERSTAND THAT THE MAJOR PORTION OF THE SIGNAL PROCESSING CIRCUIT IS LOCATED IN THE PREAMP AND THAT WHEN THE POST GAIN IS SET HIGH ENOUGH (GENERALLY "5" OR HIGHER), THE POWER AMP THEN BEGINS ADDING ITS OWN HARMONICS TO THOSE ALREADY BEING GENERATED BY THE SATURATION™ CIRCUITRY. EXPERIENCE HAS PROVEN THAT THE BEST OVERALL RESULTS ARE OBTAINED WHEN ALL THE OVERLOAD IS TAKING PLACE WITHIN THE SATURATION™ CIRCUITRY, WHILE THE INTERNAL POWER AMP/SPEAKER REMAINS BELOW THE CLIPPING POINT.**

The procedure for arriving at optimum control settings with any particular guitar and equalization characteristics are as follows:

1. Plug into the high or low gain input jack.
2. Set the **post gain** control somewhere in the **middle** of its range.
3. Set the **pre gain** control somewhere in the **middle** of its range.
4. Adjust the SATURATION™ control for the desired amount of gain/compression clipping.
5. Readjust the **pre gain** control to assure adequate drive.
6. Readjust the **post gain** control just below the point at which the power amp/speaker reaches the clipping point and adds its own harmonics to the predistorted signal. This setting is readily noticeable since the additional harmonics are audible when the **power amp** reaches its maximum output level.

#### NOTE

**PROPERLY SET UP, THE SATURATION™ CONTROL OPERATES THE POWER AMP JUST BELOW ITS CLIPPING POINT GIVING TOTALLY SMOOTH OVERLOAD CHARACTERISTICS. BY DRIVING THE POWER AMP TO ITS OUTPUT CLIPPING LEVEL, THE OUTPUT DOES NOT BECOME LOUDER.....JUST MORE DISTORTED AND SOMEWHAT LESS PLEASING.**

Experimentation and operating experience will be necessary to fully realize the unique benefits of this SATURATION™ effect.

#### POST GAIN (E)

The post gain control determines the input sensitivity of the power amp. The action of this control is similar to that of a "master volume" control and can be used to control the overload dynamics of the preamp by **decreasing** the sensitivity of the power amp. The post gain control allows maximum gain and SATURATION™ effects to be achieved in the preamp circuitry while maintaining the relatively low power output levels necessary in studio or practice applications. The operation of this control is conventional and no difficulty should be encountered. To achieve a "warm" SATURATION™ type sound, it is recommended that the post gain control be set at "5" or less. Please refer to the detailed instructions for the SATURATION™ control in order to achieve optimum results when using the post gain control in conjunction with the pre gain and SATURATION™ controls.

#### SPECIAL NOTE

CONSIDERABLE EMPHASIS HAS BEEN PLACED ON THE OPTIMUM SETTING OF THE POST GAIN CONTROL IN ORDER TO ACHIEVE SMOOTH SATURATION™ EFFECT WITHOUT POWER AMP OVERLOAD. IF, HOWEVER, A NORMAL "CLEAN" USAGE IS DESIRED, THE OPTIMUM SETTING OF THE POST GAIN CONTROL IS "10" (FULL CLOCKWISE). THIS SETTING PROVIDES THE MAXIMUM SENSITIVITY FOR THE POWER AMP AND YIELDS THE MAXIMUM HEADROOM IN THE PREAMP AND TONE STAGES, THEREBY PREVENTING ANY PREMATURE FRONT END OVERLOAD BEFORE THE POWER AMP ITSELF CLIPS. NOTICE THE OBJECT HERE IS JUST THE OPPOSITE OF THAT OF THE SATURATION™ EFFECTS.

THE AUTOMIX™ CIRCUITRY ALLOWS THE PLAYER TO ACHIEVE DISTORTION (SATURATION™) IN THE LEAD CHANNEL AND A "CLEAN" RESPONSE IN THE NORMAL CHANNEL. IN ORDER TO OPTIMIZE THE SATURATION™ EFFECT, THE POST GAIN CONTROL MUST BE SET LOW ENOUGH TO PREVENT POWER AMP CLIPPING, BUT AT THE SAME TIME, MUST BE HIGH ENOUGH TO PREVENT INPUT CLIPPING OF THE NORMAL CHANNEL. NOTICE THIS DUAL REQUIREMENT IMPOSES AN OPERATING "WINDOW" ON THE POST GAIN CONTROL. AGAIN, SETTING THE POST GAIN SOMEWHERE IN THE CENTER OF ITS RANGE ("4" TO "5") WILL ALLOW BOTH FEATURES TO OPERATE PROPERLY.

A SUGGESTION ON ACHIEVING A "CLEAN" RESPONSE FROM THE NORMAL CHANNEL IS TO SET THE NORMAL GAIN AND POST GAIN CONTROLS FIRST BEFORE PROCEEDING TO THE LEAD CHANNEL AND ITS PRE GAIN AND SATURATION™ SETTINGS.

#### NOTES ON EQUALIZATION

There is no "perfect" EQ setting that will satisfy everyone. Each instrument, speaker system, etc., has its own response characteristics which must be considered in the final EQ settings. The type of music being played, and the levels being required are also quite important.

For example:

For playing hard rock guitar, it has been found that moderate low boost or sometimes cut combined with middle boost and moderate high boost produce the best results. Most amps which have earned respect for rock guitar exhibit limited low end response, a nice fat (boosted) midrange, and a slightly boosted high end response.

Totally different settings are recommended for **clean** playing such as jazz, country, or gospel music. In those instances, moderate high and low boost are generally combined with varying degrees of midrange **cut**.

Again, there are no "perfect" settings, and there is certainly no magic in flat EQ settings. We have provided some of the most versatile and effective EQ circuitry available with which you can experiment in order to find **your** sound.

#### EQUALIZATION

To provide a degree of tonal range, most amps today are equipped with some kind of equalization controls. Many guitar amps have been designed by engineering teams having little or no understanding of the needs of guitarists, and the usual result is generally a "hi-fi" amp in a "guitar amp configuration." As you know, a guitar amp is a vital link in the electric guitar system, and proper attention must be paid to achieving the kind of response necessary for proper tonal texture.

The lead channel includes controls for low, mid, high, and "presence" frequency ranges. While many amps have similar equalization control functions, most of these offer poor operation especially in the mid and low frequency EQ ranges. Our unique EQ circuitry has been designed so that the low and mid control actions "overlap" slightly as do the mid and high control actions. This intentional "interaction" of the vital middle control enables the equalization circuitry to produce a virtual "rainbow" of tonal coloration and timbre combinations. The low, mid, and high EQ controls are not active "hi-fi" type controls where the vertical (12:00 o'clock) setting is flat. The presence EQ control is an active (boost/cut) type control and is provided to allow incremental adjustment of the extreme high end. The presence control is located at a strategic point in the circuitry to allow maximum effectiveness, especially in the distortion (SATURATION™) mode. Boost is obtained in clockwise settings, cut in counterclockwise positions, with flat presence response delivered in the vertical (12:00 o'clock) position. This EQ circuitry is capable of simulating most types of guitar response especially when used in conjunction with the amp's gain/overload dynamics. Again, experimentation and understanding are necessary for achieving maximum performance.

##### LOW FREQUENCY EQ CONTROL (F)

The low frequency EQ control is the element for determining the low frequency response of the amplifier. Our unique low frequency EQ circuitry permits smooth and precise action of this control. Experimentation will illustrate that this type of EQ is ideal for musical instrument applications and its effect on the overall tonal color is profound. Increasing low frequency response is obtained as the control is rotated clockwise. Care should be taken to not overboost the low end to avoid prematurely overdriving the power amp. Most amps that are well-respected for "hard rock" have somewhat limited low end capabilities; therefore, it is not a good idea to use a lot of low end boost. With guitar signals, extreme bass boosts do not add significantly to the "projection" capabilities but do consume a "disproportionate" amount of power, generally at the expense of high and middle frequencies which have an extremely pronounced effect on the "apparent" loudness and/or projection.....i.e., do not use too much bass boost when you need all the projection you can get. When using this control, it should be remembered that bass frequencies generally require more output power than middle or high frequencies.

##### MID FREQUENCY EQ CONTROL (G)

The mid EQ control determines the level of the vital midrange frequencies. Our research has indicated that the midrange is often the most important (and overlooked) range of frequencies. This midband is what actually makes guitars and amps sound the way they do. The extremes of highs and lows sometimes have minimal effect on the overall tonal color, while those frequencies we generally call the "midrange" really make the vital difference between merely a "good sound" and a "great sound." The middle frequency EQ control will enable tremendous tonal variation and is designed to interact slightly with both the low EQ and the high EQ controls. This interaction or overlapping action enables endless subtle tonal "shadings" to be achieved.

The action of this middle control is conventional with increasing midrange response as the control is rotated clockwise. This control is **very** effective in determining the overall "color" of the sound when using the SATURATION™/overload features of this amp. Generally, a much "thicker" and "fatter" sound is obtainable when more mid **boost** is used for hard rock. For clean country/jazz playing, more mid **cut** is generally better.....In any case, this mid EQ "works" and should be used to "fine tune" the overall low and high EQ to provide the tonal color needed.

##### HIGH FREQUENCY EQ/PULL THICK CONTROL (H)

This is the control element determining the amount of high frequency boost in the output signal. The action of this control is conventional. An increasing amount of high boost is obtained as this control is rotated clockwise. This high EQ circuit is extremely effective and should provide more than enough tonal variation for achieving almost any amount of "top end" required.

When playing hard rock, it is usually not a good idea to use maximum high end boost since excessive highs tend to make the smooth overload characteristics of this amp somewhat more "strident" and "hard" than is generally desirable.

Incorporated into the high equalization control is a pull switch that drastically alters the tonality of the entire equalization system. This pull switch adds significant amounts of upper mid frequencies and has the overall tendency to create a full "thick" midrange which has proven to be very desirable when playing in the SATURATION™ mode. This pull "thick" control adds significantly to the tonal versatility of this amplifier.

#### NOTE

WHEN THIS PULL SWITCH IS ACTIVATED, THE HIGH FREQUENCIES MAY BECOME LESS PRONOUNCED BECAUSE OF THE "FULLNESS" ADDED BY THE BOOSTED MIDDLE FREQUENCIES. IN ADDITION, NORMAL TONE CONTROL ACTION (ESPECIALLY THE MIDDLE CONTROL) IS LESS PRONOUNCED AND EFFECTIVE.



### PRESENCE EQ CONTROL (I)

To allow total control, we have included an active type presence circuit allowing true boost and cut capabilities. This control is located **after** the regular EQ controls and is provided for precisely tailoring the extreme highs. This presence control is capable of making the output signal extremely "mellow" but still "lively" as well as adding tremendous "bite" in the boost positions. It is recommended that when utilizing the SATURATION™ effect, the final "edge" or presence of the signal be adjusted with this control. Experience has proven that extreme boosts of the presence frequencies tend to cancel out some of the "mellowness" of the amp's overload characteristics. Again, experimentation is the key to achieving optimum results.

## NORMAL CHANNEL

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### PRE GAIN/PULL BRIGHT (J)

Our pre gain control is similar to conventional volume controls in that it is the first level setting device in the system. Our input preamp circuitry utilizes variable negative feedback with the pre gain control as part of the active circuit. Utilization of this type circuitry enables an optimum combination of input dynamic range, input impedance, and low noise operation for any particular gain setting. Operation should present no problem since its action is conventional even though the associated circuitry is quite different from older, totally passive circuits. Please be aware that this control exhibits the professionally accepted logarithmic (audio) taper having approximately one-tenth of the gain achieved at the 12:00 o'clock position with the balance being obtained as the control is rotated clockwise. Many manufacturers utilize "linear" action controls that concentrate almost all of the gain in the first one-third of the control rotation. While this "linear operation" is "initially impressive," it should be noted that having **all** the gain "up front" in the first one-third turn is **misleading** and significantly reduces the amount of control latitude available.

The pre gain control features an integral pull switch giving a boost to the high frequencies of approximately 8 dB. This pull switch enables significant "brilliance" to be added when desired. Experience has proven that added brilliance tends to detract somewhat from the smooth overload characteristics when playing in the distortion mode.

### POST GAIN (K)

The post gain control determines the input sensitivity of the power amp. The action of this control is similar to that of a "master volume" control and can be used to control the overload dynamics of the preamp by **decreasing** the sensitivity of the power amp. The post gain control allows maximum gain and SATURATION™ effects to be achieved in the preamp circuitry while maintaining relatively low power output levels necessary in studio or practice applications. The operation of this control is conventional and no operational difficulty should be encountered.

### EQUALIZATION

The normal channel amp features the latest "active type" equalization for unmatched tonal versatility and function. This active type EQ actually yields a true boost and cut capability as well as enabling the vital midrange EQ point to be shifted over a wide range.

The high and low EQ circuits exhibit a shelving characteristic per professional practice, while the semi-parametric midrange circuitry has a peak/notch response characteristic.

Because these are "active" controls instead of the conventional "passive" or "losser" types, the overall control action is considerably more profound. Since so much range is available, care must be taken not to overboost, which may cause you to run out of power (headroom), or to overcut, which may limit dynamic range. As with most reasonably complex systems, some degree of understanding combined with operating experience must be gained in order to achieve the total potential designed into the system.

### LOW EQ CONTROL (L)

The low EQ control determines the low frequency content of the signal and is capable of a 30 dB range yielding 15 dB of boost or 15 dB of cut. Because of the boost/cut action of this control, the vertical (12:00 o'clock) setting produces essentially a "flat" response. Rotation clockwise produces increasing amounts of **boost**, while counterclockwise rotation results in cut. Because excessive low end boost can quickly cause headroom problems in the power amp, care is advised when boosting lows. Every **3 dB** increase in boost requires **double** the power capacity. With 15 dB of boost available, it is apparent that headroom problems could easily occur at high boost settings and when playing at high levels.

### PARAMID™ CONTROL (M)

The PARAMID™ control is the element that determines whether the vital midrange of frequencies will be boosted or cut. Its operation is similar to that of the low and high EQ controls in that it provides a "flat" response in the vertical (12:00 o'clock) position with increasing boost in the clockwise and cut in the counterclockwise positions.

The vital midrange frequencies often determine much of the tonal color of any instrument. This new PARAMID™ control enables total control of these frequencies and enables almost any tonality to be achieved with proper adjustment. The PARAMID™ control determines whether the mids will be boosted or cut while working in conjunction with the frequency shift control which varies the frequency of the mid EQ circuitry. Please keep in mind that the PARAMID™ and frequency shift controls work together and must be adjusted relative to each other as well as the low and high EQ controls to obtain maximum effect.

### FREQUENCY SHIFT CONTROL (N)

The center frequency of the PARAMID™ (midrange) EQ circuit may be shifted through a considerable range by use of a "state variable" filter. This unique circuit enables the operating point of the PARAMID™ control to be placed precisely to allow duplication or creation of almost any midrange tonality. Operation of the frequency shift control causes the state variable EQ filter circuitry to sweep across the midfrequency band, enabling boost or cut at any point in the midrange. Very few instrument amplifiers have incorporated this advanced type EQ circuitry because of its more complex design.

### HIGH EQ CONTROL (O)

The high EQ control determines the overall balance of high frequencies in the normal channel's response. Its action is similar to that of the low frequency control except for its high frequency effect. High end boost is obtained in clockwise positions while cut is obtained in counterclockwise positions. Flat settings result from vertical (12:00 o'clock) settings.

### MASTER REVERB CONTROL (P)

This control determines how much delayed (reverb) signal is blended back into the main output signal. This control is conventional in operation and should present no difficulty. Please remember that the reverb function may be remotely controlled by use of the AUTOMIX™ footswitch plugged into the remote switch socket on the rear of the chassis.

### PILOT LED (Q)

The pilot LED (light emitting diode) indicates when the electrical supply (mains) is supplying power to the amplifier. This LED has a virtually infinite life span and should never need replacing throughout the life of the unit.

### GROUND LIFT SWITCH (R)

This switch is the three-position type with the center (0) position completely removing the internal grounding capacitor from the circuit. This position is normally recommended for situations where the AC power receptacle is known to contain a properly grounded 3rd wire. If properly grounded AC mains supply is not available, suitable ground lift adaptor should be used. The (+ and -) positions are used to ground the amplifier properly when only two-wire services are available. One of these positions will yield the lowest amount of residual hum or "popping" when the instrument is touched.

### SPECIAL NOTE

**DUE TO THE MORE POSITIVE GROUNDING SYSTEMS USED IN MOST COUNTRIES WITH 220/240 VOLT MAINS ELECTRICAL SYSTEMS, THE GROUND/GROUND LIFT SWITCH IS NOT FUNCTIONAL IN MODELS BUILT FOR THESE COUNTRIES.**

### ON/OFF SWITCH (S)

The on/off switch is a simple, two-position switch should present no operational problems.

## AUTOMIX™

For many years, most musical instrument amplifiers have featured two channels. Some years ago, Peavey introduced a novel system to allow use of both channels of the amplifier which enables the unit's total capabilities to be realized instead of having one channel used while the other was wasted. This unique system also featured remote control capability with channel selection being possible from a remote footswitch. We call this system "AUTOMIX™." Our AUTOMIX™ system was introduced in early 1975 and has proven to be one of the most copied innovations ever introduced in musical instrument amplification.

Use of the AUTOMIX™ is extremely simple. Channel selection is accomplished by merely depressing the "EFFECTS/SELECTOR" button on the footswitch which alternately selects either the lead or normal channel. Assuming that the lead and normal channels will normally be set up differently, the player should encounter no difficulty in ascertaining which channel is in operation at any particular time.

### NOTE

IF THE FOOTSWITCH IS NOT PLUGGED IN, BOTH LEAD AND NORMAL CHANNELS ARE OPERABLE.

## REAR PANEL

### REMOTE SWITCH SOCKET (T)

The remote switch socket is the standard "DIN" type and serves as the chassis connection for the supplied remote footswitch. Please note that the "DIN" plug has an indentation that must be mated with the matching indentation in the footswitch receptacle on the rear panel. This keying action allows the footswitch to be connected only in the proper manner. If the plug is forced or undue pressure is exerted on the shell or pins, damage could result to the footswitch plug or the chassis mounted socket. As with any precision device, reasonable care should be exercised.

### PREAMP OUT (U)/POWER AMP IN (V)

To allow "in line" patching of the various accessories, we have included a system of preamp out/power amp in jacks on the rear panel. The preamp out is the straight preamp signal which is the sum of the outputs of the two channels plus reverb. The output level is approximately 1 volt RMS and is a relatively low (600 ohms) impedance. The preamp out signal is connected through a switching contact to the power amp input jack and normally the preamp out is internally connected to the power amp's input. This circuit allows basically two modes of operation. When signal is taken from the preamp output, signal is also delivered to the internal power amplifier. If access to the internal power amplifier is needed or if some accessory device such as a noise gate, delay line, effects device, etc., is to be patched "in line," then the preamp output signal must be connected to the auxiliary unit's input, while the auxiliary unit's output must be connected to the power amp input with shielded cables, thereby placing the auxiliary unit in series or "in line" with the normal signal path. Additional booster amp/speaker combinations should be patched using the preamp output. With this unique patching facility, many interesting effects can be accomplished.

Please note that the power amp input has a sensitivity of 1 volt RMS at an input impedance of 20K ohms. Any device capable of interface with this impedance and/or level should function satisfactorily and present no difficulties.

### SPEAKER JACKS 2 & 4 OHM (W) (X)

The power amp produces the full 160 watts RMS into a 2 ohm or 4 ohm load. The internal speaker load is 4 ohms and is patched into the 4 ohm jack at the factory. When an extension speaker is employed, it should be patched into the 2 ohm jack, which is a switching jack, and activates the 2 ohm tap on the output transformer. The system now delivers the full 160 watts RMS into the 2 ohm load (two 4 ohm systems in parallel). If a 4 ohm enclosure only is used without the internal speaker, it should be patched into the 4 ohm jack.

### LINE CORD (Y)

For your safety, we have incorporated a three-wire line (mains) cable on the bottom of the chassis with proper grounding facilities. It is not advisable to remove the ground pin under any circumstances. If it is necessary to use the amp without proper grounding facilities, suitable grounding adaptors should be used. Much less noise and greatly reduced shock hazard exist when the unit is operated with the proper grounded receptacles.

### SPECIAL NOTE

**YOUR AMPLIFIER INCORPORATES INTERNAL FUSING. SHOULD YOUR AMPLIFIER DEVELOP A FAILURE, THIS INTERNAL FUSE SHOULD BE REPLACED BY COMPETENT SERVICE PERSONNEL SINCE HIGH VOLTAGES ARE PRESENT INSIDE THE CHASSIS.**

### CAUTION

**FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATING FUSE.**

# Specifications:

Due to our efforts for constant improvement, specifications are subject to change without notice.

## POWER AMPLIFIER SECTION:

### FREQUENCY RESPONSE:

+0, -1 dB, 60 Hz to 15 KHz @ 150 watts  
into 4 ohms @ 4 ohm tap

### RATED POWER & LOAD:

160W RMS into 4 or 2 ohms

### POWER @ CLIPPING:

(5% THD, 1 KHz, 120 VAC line)

Typically @ 4 ohm tap:

115W RMS into 8 ohms

175W RMS into 4 ohms

2 ohms not recommended

Typically @ 2 ohm tap:

65W RMS into 8 ohms

115W RMS into 4 ohms

175W RMS into 2 ohms

### TOTAL HARMONIC DISTORTION @ 4 OHM TAP:

Less than 0.2%, 100 mW to 100W RMS,  
60 Hz to 10 KHz, 4 ohms, typically below 0.1%

### INTERMODULATION DISTORTION @ 4 OHM TAP:

Less than 0.2%, 100 mW to 100W RMS,  
60 Hz & 5 KHz, 4 ohms, typically below 0.1%

### HUM & NOISE:

More than 90 dB below full power

### SLEW RATE:

Greater than 10 V/μSec

### POWER REQUIREMENTS: (Domestic)

450W, 120 VAC, 50/60 Hz

## PREAMP SECTION:

THE FOLLOWING SPECS ARE MEASURED AT 1 KHz WITH CONTROLS PRESET IN THE LEAD CHANNEL AS FOLLOWS:

PRE GAIN/PULL BRIGHT OFF (IN)  
SATURATION™ @ 0  
POST GAIN @ 10  
LOW & HIGH EQ @ 0  
MID EQ @ 0  
PRESENCE @ 0 dB  
PULL THICK OFF (IN)

CONTROLS PRESET IN THE NORMAL CHANNEL AS FOLLOWS:

PRE GAIN/PULL BRIGHT OFF (IN)  
POST GAIN @ 10  
LOW EQ @ +6 dB  
PARAMID™ @ -9 dB  
SHIFT @ 500 Hz  
HIGH EQ @ +9 dB

## ADDITIONALLY:

REVERB @ 0

NOMINAL LEVELS ARE WITH PRE GAIN @ 5,  
MINIMUM LEVELS ARE WITH PRE GAIN @ 10

## PREAMP JACK A INPUT:

Impedance: High Z, 220K ohms  
Nominal Input Level: -28 dBV, 40 MV RMS  
Minimum Input Level: -46 dBV, 5 mV RMS  
Maximum Input Level: +4 dBV, 1.5V RMS

**PREAMP JACK B INPUT:**

Impedance: High Z, 44K ohms  
Nominal Input Level: -22 dBV, 80 mV RMS  
Minimum Input Level: -40 dBV, 10 mV RMS  
Maximum Input Level: +10 dBV, 3V RMS

**PREAMP OUTPUT:**

Load Impedance: 1K ohms or greater  
Nominal Output: 0 dBV, 1V RMS

**POWER AMP INPUT:**

Impedance: High Z, 22K ohms  
Nominal Input Level: 0 dBV, 1V RMS

**SYSTEM HUM & NOISE @ NOMINAL INPUT LEVEL:**

20 Hz to 20 KHz, unweighted:  
70 dB below rated power

**EQUALIZATION:**

**Lead channel:**

Special low, mid, and high passive type EQ circuitry,  
Special presence active EQ circuitry

**Normal channel:**

+15 dB @ 80 Hz & 5 KHz, shelving  
+15 dB @ Paramid™, peak/notch  
Mid shiftable from 150 Hz to 1500 Hz

**AMP CAUTIONS  
DANGER**

EXPOSURE TO EXTREMELY HIGH NOISE LEVELS MAY CAUSE A PERMANENT HEARING LOSS. INDIVIDUALS VARY CONSIDERABLY IN SUSCEPTIBILITY TO NOISE INDUCED HEARING LOSS. BUT NEARLY EVERYONE WILL LOSE SOME HEARING IF EXPOSED TO SUFFICIENTLY INTENSE NOISE FOR A SUFFICIENT TIME.

THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS	SOUND LEVEL dBA, SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS OF THE ABOVE PERMISSIBLE LIMITS COULD RESULT IN SOME HEARING LOSS.

EAR PLUGS OR PROTECTORS IN THE EAR CANALS OR OVER THE EARS MUST BE WORN WHEN OPERATING THIS AMPLIFICATION SYSTEM IN ORDER TO PREVENT A PERMANENT HEARING LOSS IF EXPOSURE IS IN EXCESS OF THE LIMITS AS SET FORTH ABOVE. TO INSURE AGAINST POTENTIALLY DANGEROUS EXPOSURE TO HIGH SOUND PRESSURE LEVELS, IT IS RECOMMENDED THAT ALL PERSONS EXPOSED TO EQUIPMENT CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS SUCH AS THIS AMPLIFICATION SYSTEM BE PROTECTED BY HEARING PROTECTORS WHILE THIS UNIT IS IN OPERATION.

**CAUTION**

THIS AMPLIFIER HAS BEEN DESIGNED AND CONSTRUCTED TO PROVIDE ADEQUATE POWER RESERVE FOR PLAYING MODERN MUSIC WHICH MAY REQUIRE OCCASIONAL PEAK POWER. TO HANDLE OCCASIONAL PEAK POWER, ADEQUATE POWER "HEADROOM" HAS BEEN DESIGNED INTO THIS SYSTEM. EXTENDED OPERATION AT ABSOLUTE MAXIMUM POWER LEVELS IS NOT RECOMMENDED SINCE THIS COULD DAMAGE THE ASSOCIATED LOUDSPEAKER SYSTEM. PLEASE BE AWARE THAT **MAXIMUM POWER** CAN BE OBTAINED WITH VERY LOW SETTINGS OF THE **GAIN** CONTROLS IF THE INPUT SIGNAL IS VERY STRONG.



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